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COUNTRY ANALYSIS BRIEFS

Canada

Last Updated: April 2006

Background

Canada is a net exporter of oil, natural gas, coal, and electricity. It is one of the most important sources of U.S. energy imports.

Canada is the United States' most important trading partner, with over $450 billion worth of goods, services, investments, and financial transfers exchanged between the two countries in 2004. Canada and the U.S. also enjoy an interdependent energy relationship, trading oil, natural gas, coal, and electricity. Canada has experienced sustained economic growth during the past several years; its real gross domestic product (GDP) grew at a rate of 2.9 percent in 2005, the same as in 2004. Continuing economic recovery in the United States and higher prices for Canada's natural resource exports have driven Canada's economic growth in recent years.

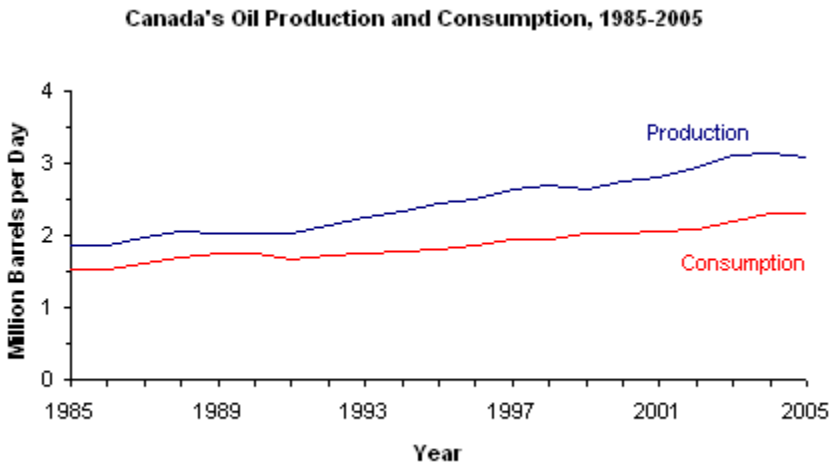
Canada has considerable natural resources and is therefore one of the world's largest producers of energy. In 2003, Canada produced 18.4 quadrillion British Thermal Units (Btu) of total energy, the fifth-largest amount in the world. Of this total, Canada consumed 13.5 quadrillion Btu in 2003. Since 1980, Canada's total energy production has increased by 80 percent, while its total energy consumption has increased only by 40 percent. Almost all of Canada's energy exports go to the United States, making ity the largest foreign source U.S. energy imports.

Oil

Canada is consistently one of the top suppliers of crude oil to the United States.

Canada's total oil production (including all liquids) was 3.1 million barrels per day (bbl/d) in 2005, while the country consumed 2.3 million bbl/d that year. The country's oil production has been increasing since 1999, as new oil sands and offshore projects have come on-stream to replace aging fields in the western provinces. Overall, analysts predict that oil sands production will increase significantly in coming years and offset the decline in Canada's conventional crude oil

production.



Source: EIA *International Petroleum Monthly*

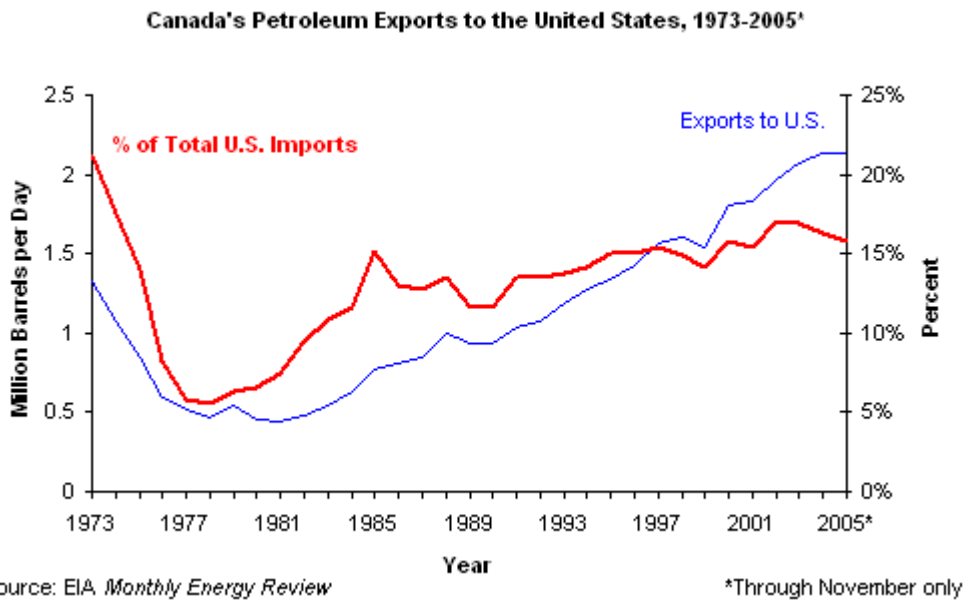
According to *Oil and Gas Journal (OGJ)*, Canada had a reported 178.8 billion barrels of proven oil reserves as of January 2006, second only to Saudi Arabia. However, the bulk of these reserves (over 95%) are oil sands deposits in Alberta. The inclusion of oil sands in official reserve estimates is not without controversy, because oil sands are much more difficult to extract and process than conventional crude oil.

Canada sends over 99 percent of its crude oil exports to the U.S., and it is one of the most important sources of U.S. oil imports. During the first eleven months of 2005, Canada exported 1.6 million bbl/d of crude oil to the U.S., the single-largest source of U.S. crude oil imports. Canada also sent some 520,000 bbl/d of petroleum products to the U.S. during this period, the most from a single country. The largest share of U.S.-bound Canadian oil exports go to the Midwest (PAD District II), with smaller amounts heading to the Rocky Mountains (PAD District IV) and the East Coast (PAD District I).

Sector Organization

Canada has a privatized oil sector that has witnessed considerable consolidation in recent years. The largest integrated operator in the country is Imperial Oil, majority owned by ExxonMobil. In 2002, Alberta Energy Company and PanCanadian Energy merged to create EnCana, Canada's largest independent upstream operator. Other significant oil producers in Canada include Talisman Energy, Suncor, EOG Resources, Husky Energy, and Apache Canada. U.S. companies maintain a sizable presence in the Canadian oil industry.

The Canadian government formed Petro-Canada in 1975 in an effort to reduce the dominance of U.S. companies in Canada's oil industry. The company received considerable initial resources from the Canadian government in its early years, though critics accused Petro-Canada of inefficiently deploying those resources and interfering with the operations of private companies. In 1991, the Canadian government began to privatize Petro-Canada, and in late 2004, the government sold its remaining 20 percent stake in the company.



Exploration and Production

Canadian oil production comes mainly from three different sources: the Western Canada Sedimentary Basin; the oil sands deposits of northern Alberta; and offshore fields.

Western Canada Sedimentary Basin (WCSB)

The WCSB, underlying most of Alberta and parts of British Columbia, Saskatchewan, Manitoba and the Northwest Territories, has been the main source of Canadian oil production for the past 50 years. The age of many of the fields, though, has led to a steady decline in conventional oil production in the WCSB. Analysts predict that oil sands will completely supplant conventional sources as the focus of future oil production in western Canada.

Oil Sands

Oil sands contain deposits of bitumen, a heavy, viscous oil. There are two methods currently used to extract bitumen from the ground: open pit mining and *in situ* (Latin for "in place"). Open pit mining resembles conventional mining techniques and is effective in extracting oil sands deposits near the surface. However, the bulk of Canada's estimated oil sands deposits (80 percent) are too deep below the surface to use open pit mining. The second method, *in situ* can reach these deeper deposits. *In situ* extraction involves the use of steam to separate bitumen from the surrounding sands and lift it to collection pools near the surface. To date, Canadian oil sands producers have employed each method almost equally, but future production will likely shift to emphasize *in situ* extraction. Once extracted, oil sands producers must add lighter hydrocarbons to the bitumen to allow it to flow through pipelines. Upgraders then process the bitumen into "synthetic crude." Some oil sands projects have integrated upgrading capacity, while others must send their raw bitumen production to another facility.

The Athabasca oil sands deposit, in northern Alberta, is one of largest oil sands deposits in the world. There are also sizable oil sands deposits on Melville Island in the Canadian Arctic, and two smaller deposits in northern Alberta near Cold Lake and Peace River.

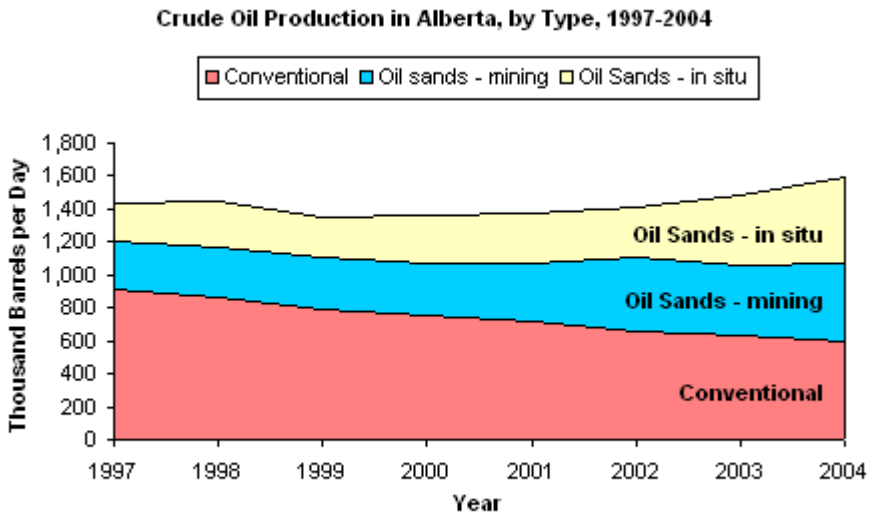
All of the largest oil sands projects in the Athabasca area utilize open-pit mining. The Syncrude Project, operated by Canadian Oil Sands Limited, produced 280,000 bbl/d in 2004. The Suncor's project has a total production capacity of 280,000 bbl/d, though a fire in 2005 caused a prolonged shutdown of the operation, with 2005 production averaging only 171,000 bbl/d. The Athabasca Oil Sands Project (AOSP), operated by Shell Canada, began production in 2002 and currently has a capacity of 155,000 bbl/d. AOSP suffered from a fire in January 2003 that shut production down for three months.

The *in situ* oil sands projects in the Athabasca area are smaller than their mining counterparts. In 2004, Suncor began operations at its Firebag project, which utilizes a relatively new *in situ*

technology called steam-assisted gravity drainage (SAGD). Firebag had a production capacity of 35,000 bbl/d in 2005. Other SAGD projects include Petro-Canada's MacKay River (30,000 bbl/d) and Dover (1,400 bbl/d); EnCana's Foster Creek (40,000 bbl/d), and Christina Lake (10,000 bbl/d); and Nexen's Athabasca (1,300 bbl/d) and Long Lake (2,500 bbl/d). Petro-Canada's Dover facility also contains a demonstration project of a new *in situ* technology called vapor extraction (VAPEX). VAPEX utilizes solvents, such as butane, to extract raw bitumen, rather than steam, which could allow significant cost savings for *in situ* operators.

The Athabasca deposit is also the focus of most planned expansions of the oil sands industry. Major projects scheduled for start-up in 2006-2007 include ConocoPhillips' Surmount (25,000 bbl/d) and Total's Joslyn (10,000 bbl/d). Petro-Canada plans to bring 50,000 bb/d of mining capacity online by 2009 at its Fort Hills oil sands project In February 2005, Canadian Natural Resources Limited (CNRL) decided to pursue its $11 billion Horizon project, which could produce 212,000 bbl/d by 2012.

Outside of the Athabasca deposit, the largest oil sands project is Imperial Oil's Cold Lake *in situ* facility, with a capacity of 140,000 bbl/d. Also in the Cold Lake area, CNRL operates Primrose (50,000 bbl/d), while Husky plans to bring its 30,000-bbl/d Tucker project online in 2006. In the Peace River deposit, Shell Canada operates Cadotte Lake (11,000 bbl/d).



Source: Canadian Association of Petroleum Producers

Despite the considerable excitement surrounding the development of Canada's oil sands reserves, there are still several difficulties that could impede the future development of the industry. Analysts predict that the production of synthetic crude from oil sands is only economically viable with synthetic crude prices in the $30 per barrel range. While further advances in oil sands technology could reduce production costs, it is likely that economical synthetic oil production will continue to be dependent upon high crude oil prices. Second, the oil sands industry is heavily reliant upon water and natural gas, which is necessary in both the extraction of bitumen from oil sands and the upgrading of bitumen to synthetic oil. Even though there have been some efforts to reduce this dependence on natural gas, any increase in natural gas prices or sharp reduction in natural gas supply would have critical repercussions for the oil sands industry. Finally, there have been reports that the oil sands boom is creating a labor shortage in Alberta's oil industry, especially in Fort McMurray. This has led to an escalation in labor costs and construction delays due to a lack of available workers.

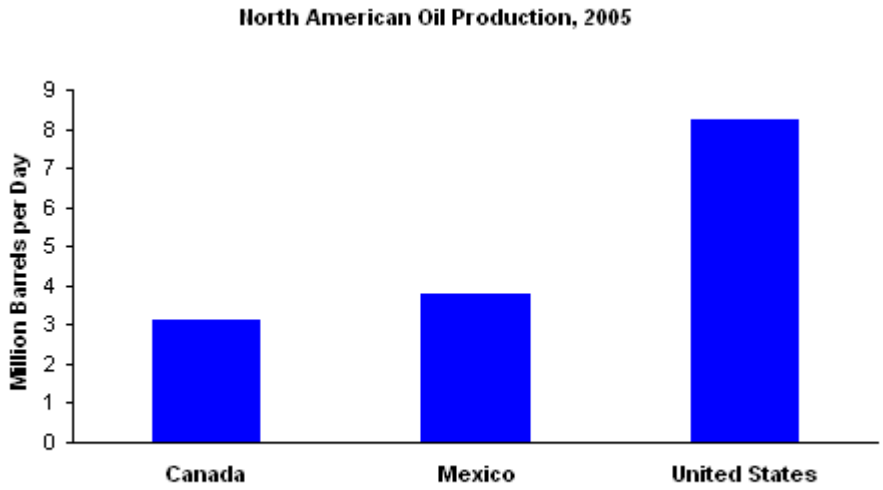
In light of these concerns, most forecasts of world oil markets estimate that Canadian oil sands will become an increasingly important component of world oil supply. EIA's *International Energy Outlook* (IEO) estimates that Canadian oil sands operators will produce 3.5 million bbl/d of synthetic crude by 2025.

Offshore

Canada has three oil projects off its Atlantic coastline, all located in the Jeanne d'Arc Basin:

Hibernia, Terra Nova, and White Rose. First discovered in 1979, the Hibernia field produced 204,000 bbl/d of crude oil in 2004. Production at Terra Nova began in 2002 and averaged 110,000 bbl/d in 2004; in June 2005, Petro-Canada, the majority owner of the field, sought regulatory approval to expand production at the field to the Far East reservoir, which contains an additional 40 million barrels of recoverable oil. Finally, Husky Energy brought the White Rose field onstream in late 2005, where production will eventually reach 90,000 bbl/d.

There is also exploration activity in the Orphan Basin, located in the deep waters north of the Jeanne d'Arc Basin. However, operators at the Atlantic oil fields must contend with harsh natural conditions, including rough seas, seasonal icebergs, and extreme temperatures. These factors increase the difficulty and costs of oil production in the region.



Source: EIA's *International Petroleum Monthly*

Industry experts believe that the Pacific coast off British Columbia also contains significant oil reserves. However, there has been no production to date on the Pacific coast because of a federal ban on offshore oil activities in the Pacific Ocean. The provincial government of British Columbia has continually lobbied to lift this ban, hoping to begin production by 2010.

Pipelines

Domestic System

An extensive pipeline system transports western Canadian oil to domestic and U.S. markets. There are two major oil pipeline operators in Canada: Enbridge Pipelines and Kinder Morgan Canada (formerly Terasen). Enbridge operates a 9,000-mile network of pipelines and terminals, delivering oil from Edmonton, Alberta, to eastern Canada and the U.S. Great Lakes region. Kinder Morgan operates the Trans Mountain Pipe Line (TMPL), which delivers oil mainly from Alberta west to refineries and terminals in the Vancouver, British Columbia area.

The expansion of Alberta's oil sands industry has necessitated the construction of several new pipelines to transport diluted bitumen and synthetic crude to downstream facilities in the Edmonton area. In 1999, Enbridge completed construction of its 920-mile, 570,000-bbl/d Athabasca pipeline, which links Suncor's oil sands operations to Enbridge's terminal in Hardisty, Alberta. Kinder Morgan operates the 280-mile, 260,000-bbl/d Corridor pipeline linking oil sands production near Muskag River to an upgrader facility at the Shell oil refinery in Scotford, Alberta. In August 2005, Kinder Morgan began preliminary engineering work on doubling the capacity of Corridor system by 2009. Both companies plan to link other oil sands projects as the come on-stream.

Export Pipelines

Canada has extensive oil pipeline connections with the United States. Enbridge maintains connections between major Canadian cities and Chicago, seamlessly integrating the Canadian and U.S. components of its network. Enbridge also operates Spearhead, a 650-mile pipeline with a capacity of 300,000-bbl/d that originally carried oil from Cushing, Oklahoma to Chicago.

Enbridge received regulatory approval in late 2004 to reverse the flow of the pipeline, allowing it to export oil from Canada deep into the U.S. market. Kinder Morgan exports oil to the U.S. through an extension of the TMPL that reaches northern Washington. It also operates Express, a 790-mile, 170,000-bbl/d pipeline that links Hardisty, Alberta and Casper, Wyoming; from Casper, the company's 930-mile, 120,000-bbl/d Platte pipeline runs to Wood River, Illinois.

Enbridge has sought regulatory approval for the construction of its 720-mile, 400,000-bbl/d Gateway pipeline from Edmonton to either Kitimat or Prince Rupert, both deepwater ports in British Columbia capable of supporting very large crude carriers (VLCC). The Gateway pipeline would facilitate the export of oil sands to Asia and California. Enbridge stated that it could complete the $2 billion project by 2009, and in April 2005, PetroChina committed to purchasing at least half of the capacity of the Gateway pipeline. Kinder Morgan has discussed plans to build a similar pipeline and upgrade the capacity of the TMPL.

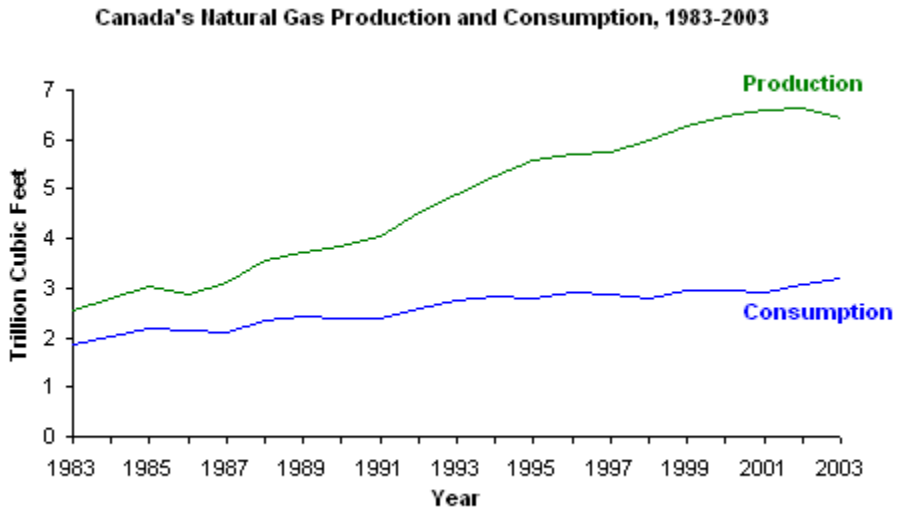
Refining

OGJ reported that Canada had 2.0 million bbl/d of crude oil refining capacity in January 2006. While Alberta contains most of Canada's crude oil production, a large portion of its refining capacity resides in the more-populated eastern part of the country. Alberta has four refineries, with total capacity of 447,400 bbl/d, whereas Ontario and Quebec have a combined eight refineries. According to Natural Resources Canada, the largest single refinery in the country is Irving Oil's 280,000 bbl/d St. John plant in New Brunswick.

Natural Gas

Canada is one of the world's largest natural gas producers and exporters.

Oil and Gas Journal (OGJ) reports that Canada had 56.6 trillion cubic feet (Tcf) of proven natural gas reserves in January 2006. The country produced 6.5 Tcf of natural gas in 2003, while consuming 3.2 Tcf. Canada is an important source of the U.S. natural gas supply. During the first 11 months of 2005, it exported some 3.9 Tcf of natural gas to the United States, representing 85 percent of total U.S. natural gas imports during that period. Most Canadian natural gas exports enter the U.S. through pipelines in Idaho, Montana, North Dakota, and Minnesota.



Source: EIA *International Energy Annual 2003*

Exploration and Production

Like the oil industry, Canada's natural gas production is concentrated in the WCSB, particularly in Alberta. Even though there have been some new conventional natural gas finds in the WCSB, many analysts predict that conventional natural gas production in the WCSB has reached its zenith. Future natural gas production should center on coal bed methane (CBM) deposits in the WCSB, Arctic frontier natural gas deposits, the Deep Basin area, and natural gas fields off the Atlantic and Pacific coasts.

Western Canada Sedimentary Basin

The WCSB includes most of Alberta and parts of British Columbia, Saskatchewan, and Manitoba. Natural gas production in the WCSB grew rapidly in the 1990s, increasing over 60 percent during

the decade. Production has since leveled at 16.6 billion cubic feet per day (Bcf/d) in 2004, of which some 80 percent occurred in Alberta. High natural gas prices in recent years have motivated increased drilling activity in the WCSB, even though average returns from each well have declined.

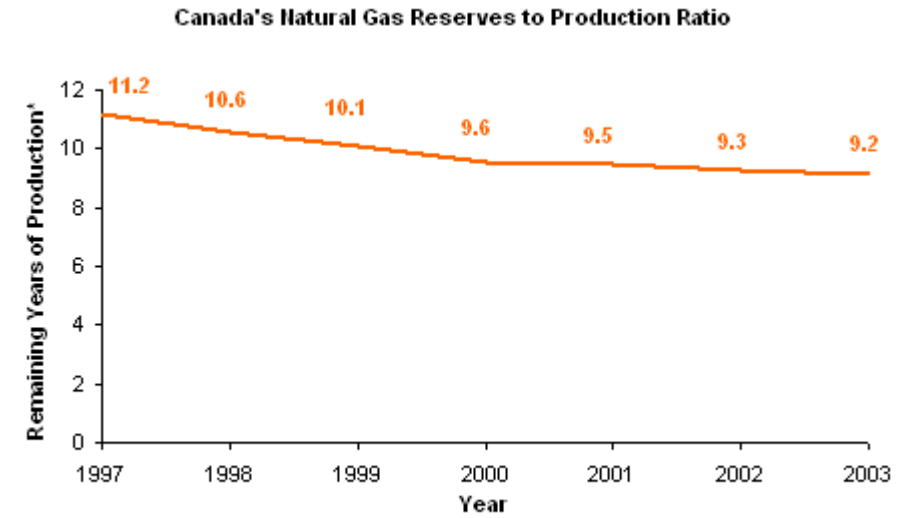
Production in the WCSB has begun to move away from Alberta towards new discoveries in British Columbia. In 2004, natural gas production in the portion of the WCSB in British Columbia was about 2.6 Bcf/d, up from 1.9 Bcf/d in 1996. There is also a small amount of natural gas production in the portion of the WCSB in Saskatchewan and Manitoba.

The Deep Basin area has the potential to offset some declines in production from the WCSB. Analysts estimated that the Deep Basin contains at least 15 Tcf of recoverable natural gas reserves. In late 2005, Shell Canada brought its Tay River discovery onstream at a rate of 50 million cubic feet per day (Mmcf/d).

Offshore

The Scotian Basin, off the coast of Nova Scotia, is the center of natural gas production on the Atlantic coast. The Sable Offshore Energy Project (SOEP), led by ExxonMobil and Shell Canada, began production in 1999. SOEP encompasses numerous offshore fields, with the Alma and South Venture fields the latest brought on-line. SOEP has a production capacity of 400 Mmcf/d of natural gas and 20,000 bbl/d of natural gas liquids (NGLs).

Offshore oil operators in Newfoundland predict that they could also produce sizable natural gas volumes from their reserves. The Hibernia and White Rose fields contain a combined 4 Tcf in recoverable natural gas reserves. Though there is no current natural gas production at either site, both ExxonMobil (Hibernia) and Husky Energy (White Rose) plan to commence natural gas production in the near future.



Source: Canadian Association of Petroleum Producers *At that year's production level

As mentioned before, the British Columbia government hopes to lift the moratorium on offshore drilling in the Pacific Ocean, giving access to an estimated 43.4 Tcf of total natural gas reserves believed to exist off its coastline.

Arctic

The Mackenzie Delta, located in the Northwest Territories, holds an estimated 5-6 Tcf of recoverable natural gas reserves. Natural gas from the region could begin flowing to southern markets by 2010, if natural gas companies can complete the Mackenzie Gas Pipeline on schedule (see below). There are three large, proven natural gas fields in the Mackenzie Delta: Imperial Oil's Taglu field (3 Tcf); ConocoPhillips' Parsons Lake field (1.8 Tcf); and the joint Shell Canada-ExxonMobil Niglintgak field (1 Tcf); In 2005, Devon Energy received preliminary environmental approval to begin an exploratory drilling program in the Beaufort Sea, which would be the first such drilling since 1989.

Liquefied Natural Gas

In order to compensate for reduced domestic production, Canadian natural gas companies have begun to explore the construction of liquefied natural gas (LNG) receiving terminals. Natural gas companies either could sell re-gasified LNG on the domestic market or re-export it to the United States. In total, there are seven LNG regasification projects in Canada at various stages of development, including two in Nova Scotia, two in British Columbia, two in Quebec, and one in New Brunswick. These projects represent a combined 4.9 Bcf/d of regasification capacity. While not without controversy, the Canadian LNG terminals have not met with the same level of resistance from local residents and environmentalists that similar facilities in the U.S. have faced.

In Nova Scotia, U.S.-based Anadarko is building the Bear Head LNG regasification terminal near Port Hawkesbury, which will have an initial send-out capacity of 1 Bcf/d. Anadarko plans to bring the facility online by 2008, but, as of February 2005, it had not yet secured a supply of LNG for the project. Also in Nova Scotia, Keltic Petrochemicals, in conjunction with Netherlands-based Petroplus, has proposed a 1 Bcf/d LNG receiving terminal at Goldsboro, which would feed natural gas to a petrochemical plant and the distribution grid.

In New Brunswick, Canaport LNG, a consortium of Irving Oil and Repsol-YPF, began construction of a 1 Bcf/d LNG terminal at Canaport in September 2005, with completion slated for 2008. In British Columbia, two companies, WestPac Terminals and Galveston LNG, have proposed LNG receiving terminals at Prince Rupert (300 Mmcf/d) and Kitimat (600 Mmcf/d), respectively.

In Quebec, Petro-Canada and TransCanada Pipelines planned to build a 500-Mmcf/d LNG receiving terminal at Gros Cacouna, in the St. Lawrence River. In 2004, Petro-Canada began talks with Russia's Gazprom to feed the Gros Cacouna terminal from Gazprom's planned Shtokman field. Petro-Canada expects to begin construction of the project in 2007. Also in Quebec, a consortium of Enbridge, Gas Metro, and Gaz de France have filed a preliminary environmental study for their Rabaska LNG terminal, which they would build at Levis with an initial capacity of around 500 Mmcf/d.

Unconventional Natural Gas Sources

CBM production is still in its infancy in Canada, with the first wells drilled only in 1997. There is a strong belief that CBM production will eventually replace the decline in conventional natural gas production. In 2004, CBM production was at 100 Mmcf/d, with predictions that it could average over 1,400 Mmcf/d by 2010. Analysts estimated that Canada has 500 Tcf of recoverable CBM deposits, concentrated in British Columbia and Alberta.

Pipelines

Domestic System

TransCanada Pipelines is the largest operator of natural gas pipelines in Canada. Its 25,600-mile network transports the bulk of Canada's natural gas production. Important parts of the TransCanada network include the 13,900-mile, 10.6-Bcf/d Alberta System, the 120-mile, 0.9-Bcf/d British Columbia System, the 8,900-mile, 7.2-Bcf/d Canadian Mainline, and the 600-mile, 3.0-Bcf/d Foothills System.

Mackenzie Gas Project

A consortium of natural gas companies, led by Imperial Oil, plan to build the Mackenzie Valley natural gas pipeline. The 760-mile, 1.2-Bcf/d pipeline would carry natural gas from inside the Arctic Circle to northern Alberta, where it would flow into the existing natural gas transportation system; there would also be a parallel pipeline to carry NGLs. Canada's National Energy Board (NEB) scheduled a series of public hearings on the project for 2006, where it would consider the economic and environmental impacts of the project. If the project attains regulatory approval, construction of the system would likely last four years and cost some C$6 billion.

Alaskan Pipeline

Supporters of the Mackenzie pipeline also worry about the completion of a rival natural gas pipeline from Alaska's North Slope to the United States. The 3,400-mile, 4.6-Bcf/d Alaskan pipeline would likely not enter service until 2012. The U.S. Congress approved US$18 billion in loan guarantees in late 2004 for the US$20 billion project. There are some legal questions concerning who will construct and operate the Canadian portion of the pipeline, which have delayed completion of the project. As a result, there has been talk of expanding LNG export capacity in Alaska as an alternative to the pipeline.

Export Pipelines

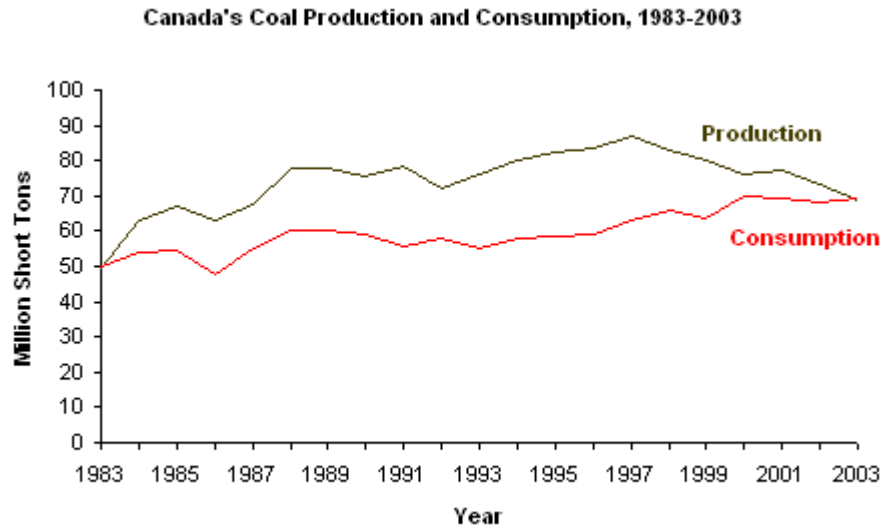
Canada's natural gas pipeline system is highly interconnected with the United States. The 1,300-mile, 1.9-Bcf/d Gas Transmission Northwest pipeline runs from the British Columbia-Idaho border to the Oregon-California border, connecting TransCanada's western Canadian network to the U.S. domestic market. The 2,000-mile, 2.4-Bcf/d Great Lakes Gas Transmission pipeline runs from Emerson, Manitoba to St. Clair, Ontario, servicing Minnesota, Wisconsin, and Michigan. Running from the New York-Canada border to Long Island, the 400-mile, 0.9-Bcf/d Iroquois Gas Transmission System pipeline serves natural gas distribution networks in New York State. The 280-mile, 0.2-Bcf/d Portland Natural Gas Transmission System distributes natural gas from Quebec to greater New England. The 780-mile, 650-Mmcf/d Maritimes and Northeast Pipeline transports natural gas from Canada's Atlantic natural gas fields to Dracut, Massachusetts, where it interfaces with the U.S. domestic network.

Alliance Pipeline Limited, a partnership of Enbridge and the Fort Chicago Energy Partners income fund, operates the 970-mile, 1.3-Bcf/d Alliance pipeline from Gordondale, Alberta to the Saskatchewan-Montana border. Its U.S.-based partner company operates the U.S. portion of the pipeline, which runs 890 miles to Illinois.

Coal

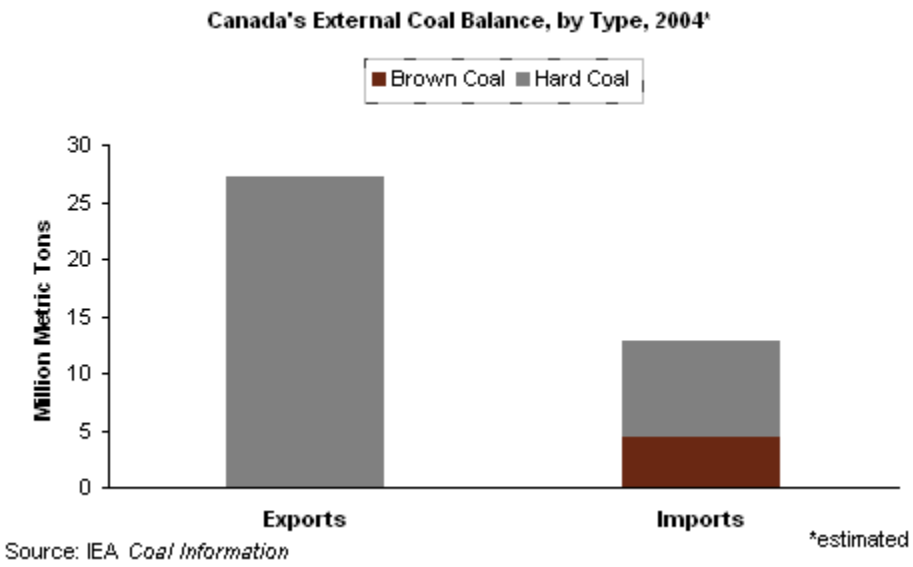
Canada is an exporter of thermal coal (for steel-making), mostly to Asia.

Canada holds an estimated 7.3 billion short tons of recoverable coal reserves. Coal production in the country has declined steadily in recent years. The country produced 68.5 million short tons (Mmst) in 2003, down from a peak of 86.7 Mmst in 1997. Coal production is concentrated in the western part of the country, with Alberta containing about half of total coal production. The largest coal producer in Canada is Luscar Limited, which controls over half of the market. In contrast to Canadian coal production, coal consumption has increased over the past decade, reaching 69.4 Mmst in 2003. The bulk of consumption fuels electricity generation, with the remainder used in the production of steel or as primary consumption at industrial facilities.



Source: EIA *International Energy Annual 2003*

Canada exports over half its coal production, mostly to Asia, with the rest going chiefly to Europe and Latin America. These exports are overwhelmingly coking coal. On the other hand, Canada imports some thermal and coking coal, mostly from the United States.



Source: IEA *Coal Information*

Electricity

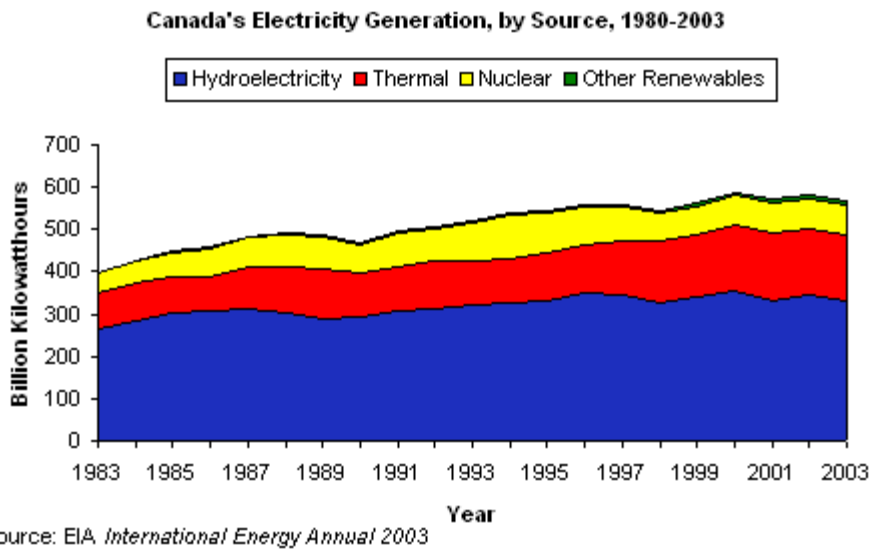
Canada is the world's largest producer of hydroelectricity.

Canada had 115 gigawatts of installed electricity generating capacity in 2003. The country produced 566.3 billion kilowatt hours (Bkwh) of electric power in 2003 while consuming 520.9 Bkwh. Some 59 percent of Canada's electricity generation comes from hydroelectricity, followed by conventional thermal (27 percent), nuclear (12 percent), and other renewables (2 percent).

Canada and the United States have an extensive electricity trade, and the electricity networks of the two countries are heavily integrated. In 2003, Canada exported 33.0 Bkwh of electricity to the United States while importing 22.5 Bkwh. While Canadian electricity exports to the U.S. in 2003 increased from 2002, the trend in recent years has seen exports to the U.S. decline, while imports have increased. Due to the increasing interdependence of the networks in both countries, a dependency made clear during the 2003 Northeast blackout, there have been greater efforts to increase cooperation and coordination between Canada and the U.S. A bilateral commission is planning the formation of the Electric Reliability Organization, an intergovernmental organization that would monitor network reliability, settle trans-border disputes, and formulate common industry standards.

Sector Organization

Canada's provinces hold most responsibility for regulating the electricity industry. Province-owned utility companies dominate generation, transmission, and distribution activities. The three largest such companies are Ontario Power Generation, Hydro-Quebec, and B.C. Hydro. There are some privately owned firms, and most provinces allow open access to the electricity grid, but they are marginal to the overall market.

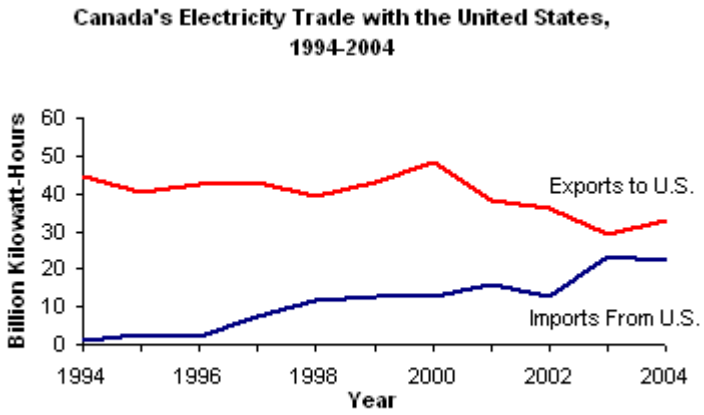


Source: EIA *International Energy Annual 2003*

There have been efforts to restructure the Canadian energy sector, with an eventual aim to privatize the industry. Alberta began deregulation in 2001, followed by Ontario in 2002. However, in both places, electricity prices surged following initial deregulation efforts, causing the provinces to initiate price caps on residential utility rates. Both provinces have plans to remove these caps in the near future. Privatization of province-owned utility companies has also stalled, facing pressure from organized labor and consumer groups.

Hydroelectricity

Canada is the world's largest producer of hydroelectricity, generating over 332.5 Bkwh from the source in 2003. Quebec's La Grande plant is one of the world's largest hydroelectric facilities, with an installed capacity of 15,000 MW. Quebec has the largest share of Canada's hydroelectric production, followed by British Columbia. It is estimated that Canada still has 180,000 MW of hydroelectricity potential remaining, though only 34,000 MW is currently deemed economically feasible.



Source: EIA *Electric Power Annual 2004*, Table 6.3

Conventional Thermal

The large majority of Canada's conventional thermal electricity generation comes from coal, representing about three-quarters of such production. There are efforts in many provinces to convert thermal generation capacity to natural gas, in order to reduce pollution and help meet Canada's requirements under the Kyoto Protocol to cut carbon dioxide emissions (see below). In 2004, the government of Ontario announced plans to convert over 7,000 megawatts (MW) of coal-fired generating capacity to natural gas. On the other hand, competing demands for natural

gas, especially from oil sands producers, and dwindling domestic reserves could hinder the large-scale transition from coal to natural gas.

Nuclear

Ontario contains the vast majority of Canada's nuclear energy capacity. Canada's nuclear energy production peaked in 1994 at 102.4 Bkwh and has since declined, as new construction has not replaced mothballed reactors. Recently, though, there has been renewed interest in nuclear energy, spurred by desires to comply with Canada's Kyoto obligations. In late 2005, Ontario Power Generation (OPG) completed the restart of its Pickering A Unit 1 reactor, representing 500 MW of installed generating capacity.

Other Renewables

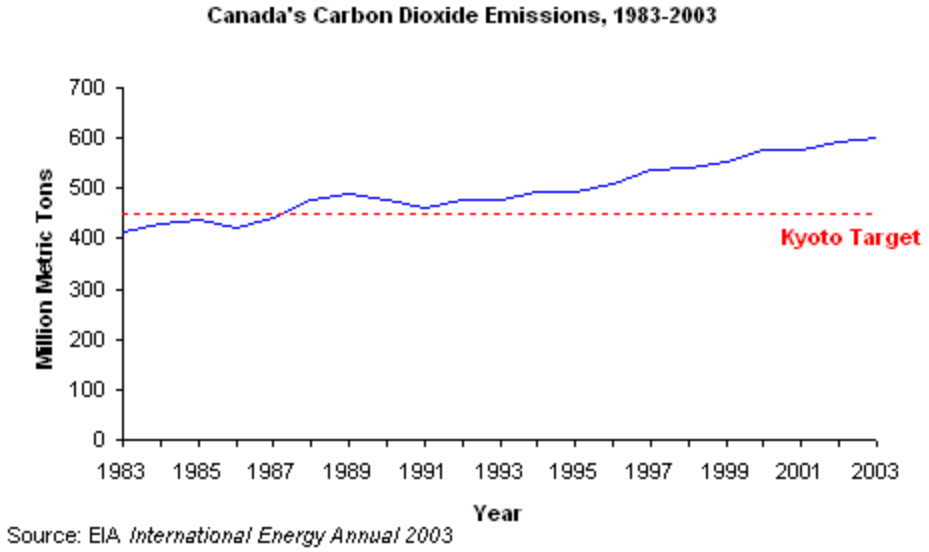
Estimates maintain that Canada has some 28,000 MW of wind power potential, spread throughout the country, with current installed capacity of 370 MW. The largest wind project in Canada is Le Nordais, on the shores of the St. Lawrence River in Quebec, with an installed capacity of 100MW. Quebec is positioning itself as the leader of Canada's nascent wind industry: Hydro-Quebec, the province-owned electric utility, has signed future contracts for an estimated 1,000 MW of wind generation capacity.

Environment

Canada has one of the most energy-intensive economies in OECD.

In 2003, Canada consumed 13.5 quadrillion British thermal units (Btu) of total energy and released 600.2 million metric tons (Mmt) of energy-related carbon dioxide emissions. Per capita energy consumption (430 million Btu) and per capita carbon dioxide emissions (20 metric tons) were some of the highest amongst the 25 member of the Organization for Economic Co-operation and Development (OECD). Owing to its focus on energy-intensive industries, Canada had the third-most energy-intensive and the fourth-most carbon-intensive economy in the OECD.

Canada's energy abundance has encouraged the development of a highly fuel-intensive economy based on natural resource extraction and processing. This heavy reliance on energy-intensive industries has led to serious environmental concerns, primarily regarding air pollution and climate change. The country's abundant hydropower has helped offset some of these concerns.



Source: EIA *International Energy Annual 2003*

Canada is a signatory to the Kyoto Protocol. As an Annex I country, Canada has pledged to reduce its carbon dioxide emissions to 6 percent below 1990 levels by 2012. The Canadian government plans to spend over C$6 billion to meet the Kyoto requirements, chiefly by purchasing over C$1 billion worth of emissions credits, greater investment in green technologies, and tax credits for industrial reductions in carbon dioxide emissions.

Please view the full environmental report for more information.

Profile

Country Overview

Head of Government	Prime Minister Stephen Harper (since January 2006)
Location	Northern North America, bordering the North Atlantic Ocean on the east, North Pacific Ocean on the west, and the Arctic Ocean on the north, north of the conterminous US
Independence	1 July 1867 (union of British North American colonies); 11 December 1931 (independence recognized)
Population (2005E)	32,805,041
Languages	English (official) 59.3%, French (official) 23.2%, other 17.5%
Religion	Roman Catholic 42.6%, Protestant 23.3% (including United Church 9.5%, Anglican 6.8%, Baptist 2.4%, Lutheran 2%), other Christian 4.4%, Muslim 1.9%, other and unspecified 11.8%, none 16% (2001 census)
Ethnic Group(s)	British Isles origin 28%, French origin 23%, other European 15%, Amerindian 2%, other, mostly Asian, African, Arab 6%, mixed background 26%

Economic Overview

Currency/Exchange Rate (January 30, 2006)	1 Canada Dollar (CAD) = 0.872 USD
Inflation Rate (2004E, 2005E, 2006F)	1.8%, 2.3%, 1.9%
Gross Domestic Product (GDP, 2005E)	$1.13 trillion
Real GDP Growth Rate (2004E, 2005E, 2006F)	2.9%, 2.9%, 2.9%
Unemployment Rate (2005E)	6.8%
External Debt (2005E)	$600.7 billion
Exports (2005E)	$373 billion
Exports - Commodities	motor vehicles and parts, industrial machinery, aircraft, telecommunications equipment; chemicals, plastics, fertilizers; wood pulp, timber, crude petroleum, natural gas, electricity, aluminum
Exports - Partners (2004E)	US 85.2%, Japan 2.1%, UK 1.6%
Imports (2005E)	$320 billion
Imports - Commodities	machinery and equipment, motor vehicles and parts, crude oil, chemicals, electricity, durable consumer goods
Imports - Partners (2004E)	US 58.9%, China 6.8%, Mexico 3.8%
Current Account Balance (DATE(S))	$23 billion

Energy Overview

Proven Oil Reserves (January 1, 2006E)	178.8 billion barrels
Oil Production (2005E)	3,151 thousand barrels per day, of which 76% was crude oil.
Oil Consumption (2005E)	2,319 thousand barrels per day
Net Oil Exports (2005E)	832 thousand barrels per day
Crude Oil Distillation Capacity (2006E)	2,017 thousand barrels per day
Proven Natural Gas Reserves (January 1, 2006E)	56.6 trillion cubic feet
Natural Gas Production (2003E)	6.5 trillion cubic feet

Natural Gas Consumption (2003E)	3,211.9 billion cubic feet
Net Natural Gas Exports (2003E)	3.3 trillion cubic feet
Recoverable Coal Reserves (2003E)	7,251 million short tons
Coal Production (2003E)	68.5 million short tons
Coal Consumption (2003E)	69.4 million short tons
Electricity Installed Capacity (2003E)	115 gigawatts
Electricity Production (2003E)	566.3 billion kilowatt hours
Electricity Consumption (2003E)	520.9 billion kilowatt hours
Total Energy Consumption (2003E)	13.5 quadrillion Btus*, of which Oil (32%), Hydroelectricity (25%), Natural Gas (24%), Coal (12%), Nuclear (6%), Other Renewables (1%)
Total Per Capita Energy Consumption (2003E)	427.9 million Btus
Energy Intensity (2003E)	14,599.8 Btu per $2000-PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2003E)	600.2 million metric tons, of which Oil (46%), Natural Gas (30%), Coal (24%)
Per-Capita, Energy-Related Carbon Dioxide Emissions (2003E)	19 metric tons
Carbon Dioxide Intensity (2003E)	0.6 Metric tons per thousand $2000-PPP**
Environmental Issues	air pollution and resulting acid rain severely affecting lakes and damaging forests; metal smelting, coal-burning utilities, and vehicle emissions impacting on agricultural and forest productivity; ocean waters becoming contaminated due to agricultural, industrial, mining, and forestry activities
Major Environmental Agreements	party to: Air Pollution, Air Pollution-Nitrogen Oxides, Air Pollution-Persistent Organic Pollutants, Air Pollution-Sulfur 85, Air Pollution-Sulfur 94, Antarctic-Environmental Protocol, Antarctic-Marine Living Resources, Antarctic Seals, Antarctic Treaty, Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands signed, but not ratified: Air Pollution-Volatile Organic Compounds, Marine Life Conservation

Oil and Gas Industry

Organization	Private sector. Major companies include ExxonMobil (via its Imperial Oil subsidiary), Royal Dutch Shell, Suncor, EnCana, and Talisman Energy
Major Oil and Gas Regions	Alberta, British Colombia, Saskatchewan, Nova Scotia, Newfoundland.
Major Pipeline Operators	Enbridge, Kinder Morgan, TransCanada, Alliance Pipeline Limited, Maritimes and Northeast.
Major Refineries (capacity, bbl/d)	Irving Oil St. John (250,000), Valero Energy Levis (215,000), Imperial Oil Edmonton (187,200)

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.
**GDP figures from OECD estimates based on purchasing power parity (PPP) exchange rates.

Links

EIA Links
EIA - Country Information on Canada

U.S. Government
CIA World Factbook - Canada
U.S. Department of Energy's Office of Fossil Energy's International section - Canada
U.S. Department of Energy on Electricity Trade and Canada
U.S. Department of State Country Background Notes - Canada
U.S. Department of State Country Report on Economic Policy and Trade Practices
U.S. Embassy in Canada
U.S. International Trade Administration, Country Commercial Guide - Canada

Associations and Institutions
Canadian Association of Oilwell Drilling Contractors
Canadian Association of Petroleum Producers
Canadian Centre for Energy Information
Canadian Electricity Association
Canadian Energy Pipeline Association
Canadian Energy Research Institute
Canadian Wind Energy Association
Energy Council of Canada
Oil Sands Discovery Centre
The Coal Association of Canada

Foreign Government Agencies
Alberta Department of Energy
Alberta Energy and Utilities Board
British Columbia Ministry of Energy and Mines
Manitoba Petroleum Division
National Energy Board of Canada
Natural Resources Canada, Energy Sector
New Brunswick Ministry of Energy
Newfoundland and Labrador Ministry of Mines and Energy
Newfoundland Offshore Petroleum Board
Northwest Territories Government, Oil and Gas Division
Nova Scotia Offshore Petroleum Board
Ontario Ministry of Energy
Québec Ministry of Energy
Saskatchewan Industry and Resources

Oil and Natural Gas
Anadarko Petroleum Corporation
Apache Canada Limited
BP Canada
Burlington Resources Incorporated
Canadian Natural Resources Limited
Canadian Superior Energy Incorporated
ChevronTexaco Canada
ConocoPhillips Canada
Deer Creek Energy Limited
Devon Energy
EnCana
EOG Resources
Husky Energy
Imperial Oil
Japan Canada Oil Sands Limited
Murphy Oil Corporation
Nexen Incorporated
Norsk Hydro Canada
Petro-Canada
Opti Canada Incorporated
Shell Canada Limited
Suncor Energy
Syncrude

Aboriginal Pipeline Group
Alliance Pipeline
Athabasca pipeline
Corridor Pipeline
Enbridge
Maritimes and Northwest Pipeline
Millennium Pipeline
Terasen
TransCanada Pipelines

Electricity
Atomic Energy of Canada Limited (AECL)
British Columbia Hydro
Ontario Power Generation
SaskPower

Sources

Access Northeast Energy
Alberta Energy and Utilities Board
British Columbia Ministry of Energy and Mines
Calgary Herald
Cambridge Energy Research Associates
Canadian Association of Petroleum Producers
Canada 's National Energy Board
Canadian Business
Canadian Press
CIA World Factbook
ConocoPhillips
Deutsche Bank
Devon Energy
Dow Jones
Economist Intelligence Unit ViewsWire
Edmonton Journal
Electric Utility Week
Enbridge Pipelines
EnCana Energy Corporation
Energy Daily
ExxonMobil
Foster Natural Gas Report
Financial Times
Gas Daily
Gas-To-Liquids News
Global Insight
Husky Energy
Imperial Oil
International Energy Agency
International Herald Tribune
International Oil Daily
Inside F.E.R.C.
Investor’s Business Daily
Missoulian
National Post
Natural Gas Week
Natural Resources Canada
Newfoundland Offshore Petroleum Board
Montreal Gazette
New York Times
Nova Scotia Department of Energy
Oil and Gas Journal
Oil and Gas Investor
Oil Daily
Oilweek
Offshore
Ottawa Citizen
Petro -Canada
Petroleum Economist

Petroleum Intelligence Weekly
Pipeline and Gas Journal
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